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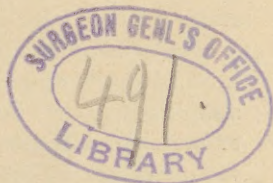
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PERIODICAL SLEEP SEIZURES OF AN EPILEPTIC NATURE.*

BY GEORGE W. JACOBY, M. D.

THERE can be no doubt that the study of physiological sleep is surrounded by insuperable difficulties, and that no great advance in our knowledge of the causes and laws which govern this condition has been made. To a certain extent this failure must be attributed to the almost exclusive employment of experimental physiology as a method of study, and the neglect of other methods. The subject is of so complex a nature that we can not hope to attain any results from one method alone, and it would seem natural that we should give more attention to the clinical side of the question than has hitherto been done. Particularly does it seem reasonable that the study of pathological disorders of sleep should be of service in this regard. The production of artificial sleep, known as the hypnotic state, has of late years so engrossed the attention of all observers that pathological modifications of spontaneous sleep have been almost totally disregarded. The appearance of Géligneau's publication on narcolepsy in 1880 for a time caused

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considerable interest to be taken in these cases of abnormal sleep, and they were then studied and classified.

Under the designation narcolepsy are classed all cases in which, from whatsoever cause, an imperative and irresistible somnolence occurs suddenly, and recurs after more or less short intervals. This condition may occur from a variety of causes, but the sleeping states known as hysterical are of so interesting a nature, and they have received so much attention, that all other causal agencies have been overshadowed by them; it is therefore not surprising that the majority of practitioners are prone to class all cases of periodically recurring sleeping attacks as hysterical: thus, while it has been acknowledged that certain of these cases of sleep seizures may be epileptic in nature, this characteristic has been entirely lost sight of. These cases of epileptic sleeping attacks are undoubtedly of considerable interest and importance, and they become so from the diagnostic difficulties which they present, as well as from the medico-legal complications which they may lead to; there can be no doubt that they occur much more frequently than the scant literature of the subject would induce us to assume. A careful study of all published cases of sleeping attacks, of whatsoever nature, certainly leaves the impression that a number of these, even if occurring in hysterical patients, are epileptic in nature. It is my intention to speak of such cases only as are undoubtedly epileptic, even though not accompanied by convulsions, and for this reason I can not enter upon the cases just referred to, which for the most part are described as cases of hystero-epilepsy. Personally, I have decided objections to the use of this compound designation. That epileptic patients not only may, but frequently do, have hysterical attacks I willingly admit; but in describing these attacks we should give them their proper designation—epileptic or hysterical,

as the case may be—and not create confusion by calling them hystero-epileptic.

A case reported by Sahlmen, which Dana includes under those of epileptic somnolence, is one of the few in which the author, notwithstanding the marked hysterical symptoms present in the intervals of the attacks, pronounces the convulsions and sleep attacks as epileptic, and there can be no doubt but that he is correct in this classification.

Cases of recurrent sleeping attacks unaccompanied by convulsions, but probably epileptic, in which the sleep seizure constituted the entire palpable attack, have been described by Westphal, Fischer, Mendel, and Putzel (communicated by Dana), and very recently by Berkan. Possibly the cases of Siemens and Foot also belong to this category.

The application of the term epilepsy has of late years been very much extended, and now this term embraces very much more than the train of symptoms described as tonic-clonic convulsions with loss of consciousness. We now distinguish a variety of epileptic conditions, making use of the terms *haut mal* and *petit mal* as designations for two gross divisions. In this latter category we must class those cases which, while they have little or nothing in common with the classical epileptic attack, nevertheless present symptoms which can not be explained in any other way than by the assumption of their epileptic nature. These symptoms are, in the main, short disorders and interruption of psychic action, followed in all instances by amnesia.

If the condition known as *haut mal*, occurring with or without psychic disturbances, is of itself highly interesting, that variety just referred to must attract our attention in a much wider way.

One of the most interesting chapters in the study of epilepsy is undoubtedly that of sleep, and this state has

been fully treated of by Siemens. It is well known that many epileptics sleep after every convulsive attack, that a smaller number do not sleep after their attacks, and that there are patients who present no regularity in this regard, but who sleep after some attacks but do not sleep after others. What, however, is not so well known is that, in some patients, attacks of sleep constitute the chief symptom, and, as stated, it is with cases of this class solely that I propose to deal in the present communication. Such cases as Reynolds's (that of a young lady who did not sleep when she had severe convulsions, but was depressed and comatose all day when slight attacks preceded), Nothnagel's (that of a lady with otherwise short and light sleep, who very shortly before her epileptic attacks fell into a very long and deep sleep), and Schultz's (that of an epileptic sailor in whom the attacks always occurred about dinner time and were announced by tiredness, followed by a sleep during which the convulsion occurred), differ from the cases which I wish to report, and, although interesting, can not be more than mentioned.

The cases of periodical recurrent sleep seizures of an epileptic nature which have come under my own observation are the following :

CASE I.—A man, aged twenty-nine (seen in 1887); family history neuropathic; mother had "nervous spells" all her life; one brother was epileptic and died suddenly. Patient himself was perfectly well until his twelfth year, when, in consequence of fright produced by being chased by a dog, he fell down in a convulsive attack. He was completely unconscious, bit his tongue and frothed at the mouth. After the attack he slept for several hours. This was the only purely convulsive attack that he or his family admit his ever having had. At the age of twenty-one he had a peculiar attack described as follows: He was walking with a friend, conversing upon ordinary matters, when he suddenly wheeled around, completing a full circle, and then be-

gan to run at full speed. After running a distance of about five hundred feet he fell, and when his friend came to him he found him lying upon the ground apparently fast asleep. The assertions are positive that no convulsions occurred. He slept for about fifteen minutes, attempts at arousing him proving futile, and awoke as from a normal sleep, with total amnesia as to what had occurred from the time he started to run; he, however, perfectly remembered the subject of the conversation which he was engaged in prior to this occurrence. The next attack took place under similar circumstances about two months later. The attacks gradually grew more and more frequent, so that of late years they have occurred almost daily and sometimes he has had several in one day. Whenever these attacks have been witnessed from their commencement, the reports all agree that the first intimation of the attack is the starting off on a run. He never runs for a long distance, sometimes only a few yards; he never has a convulsion of any kind; and when he ceases running is found asleep, generally having fallen, sometimes leaning against some support. A complete attack has never been witnessed indoors, but he has been found asleep in all places and positions. The sleep, as far as known, does not last more than fifteen minutes, generally less. Finally, it must be noted that the patient is a somnambulist, performing various automatic actions of a quiet nature, as walking, talking, etc. As a child he was subject to attacks of *pavor nocturnus*. I never had occasion to witness one of his attacks.

It is hardly probable that the epileptic nature of this case can be doubted. The case belongs to those of *pro-cursive epilepsy*, being made up of the automatic action, which here seems to take the place of a convulsion and the subsequent sleep. This sleep seems to me to be similar to the ordinary sleep of epileptics after a convulsive attack. For this reason the case hardly belongs to the category to which I intended confining my remarks, but, as the patient was often found asleep without any positive knowledge of preceding occurrences, we are justified in record-

ing it here. He is totally unconscious from the time he starts to run until he awakens from his sleep, so that the possibility remains that he actually falls asleep at once and that the running is an automatic (somnambule) action, forming part and parcel of this sleeping state.

CASE II.—G. F. W., aged thirty-five (seen in 1890); family history unimportant; has had a venereal ulcer without any secondary symptoms; professes to have been perfectly well otherwise. Ten years ago he began to increase rapidly in weight, so that from a hundred and fifty pounds his weight within a period of two years increased to two hundred and sixty-seven. At present his weight is two hundred and fifty. This increase in weight did not trouble him; he felt perfectly well and was not obliged to lose a single day's work on account of ill health. His occupation was that of a barber. Four years ago, while shaving a customer, he had what he calls an "attack." This attack consisted in his falling asleep; the razor with which he was shaving was firmly grasped in his hand and he was bending over the occupied barber chair; when he awoke everything was in the same position except the customer, whose discretion had probably induced a precipitate retreat. Patient felt perfectly well and bright before and after the attack; he himself says the entire attack came like a rainstorm from a clear sky. The following day, under similar circumstances, he had another attack, and, as was natural, lost his situation. The attacks, which from the first recurred daily, increased in frequency so that he would have a number in one day. Mental and bodily quietude favored their production, so that sitting unoccupied would almost certainly superinduce an attack. At present these attacks occur under all circumstances; he has fallen asleep while smoking a pipe, and thereby has set fire to the carpet; he has often fallen asleep while washing himself; and a few days ago, while seated in a chair near a hot stove, he had an attack during which he fell upon the stove, burning his face and forehead intensely. He has also been overtaken by this sleep while standing on the front platform of a street car, and has then fallen off into the street; further-

more, he goes to sleep while walking out of doors and continues walking until he awakes, having encountered some obstruction or having fallen. The longest intermission between the attacks is four or five hours, but usually not more than an interval of an hour exists. The attacks, which, as stated, are particularly frequent when patient is not actively engaged, also occur in the midst of hard physical labor. Unable to continue at his trade, the patient, in the hope that hard labor might prevent the recurrence of the attacks, accepted employment as a longshoreman. As a proof of his physical strength, he tells me that he is able, unaided, to lift and load upon a wagon objects weighing three hundred pounds. Even work of this kind did not influence the occurrence of the seizures. As regards the character of these seizures, the patient, whose intelligence is perfectly normal, can give but little information; he says that his eyes grow heavy and, notwithstanding strenuous efforts to prevent it, they close and he sleeps; he has no further premonition of the approaching attack, and during it is perfectly unconscious. I have repeatedly witnessed these attacks, and can add that his face becomes intensely congested and his head falls forward upon his chest; his pupils during the sleep are contracted and his respiration and pulse are slower than usual. As far as I have been able to observe them, these attacks are of two kinds—light and severe ones. The first partake more of the character of “absences,” but lasting somewhat longer, and from these he can be awakened by shaking or addressing him roughly. The long attacks are different. In the beginning of these it is impossible to arouse him by any kind of irritation; even with a faradaic brush I have failed; but toward the end of the attack pricking with a pin causes him to make warding-off movements with his hands, and sometimes, but not always, awakens him. The attacks which I have witnessed, when not interfered with, have all terminated as normal sleep terminates in normal persons. The duration of his attacks varies from a few minutes to three quarters of an hour. They also occur when he is in bed, and his relatives at such times distinguish these attacks from normal sleep by their not being able to awaken him. Otherwise he is a very light sleeper—in fact, very

restless, passing the greater part of the night in a semi-wakeful condition. Patient has been a somnambulist since childhood, his automatic actions usually being of a quiet nature; he has, however, had noisy somnambulistic attacks in which he created disturbance by shouting and striking about himself with any object within his reach. In one of these attacks he struck his roommate with a water pitcher, and the following morning knew nothing of what he had done. Convulsions of any kind are positively denied; nevertheless, an examination of his tongue showed scars, and he says that it is often sore and swollen. Treatment of various kinds—with bromides, iodides, and reduction of weight—all proved unsuccessful in modifying the seizures in any way.

There can, in the light of our present knowledge, hardly be any doubt that the nature of this case is epileptic, but we are not warranted in classing these sleep attacks in the same category as the sleep of epileptics after convulsions; neither is it admissible to class them among the somnolent states which are frequently present in gross brain disease, as the patient in the intervals between the attacks was perfectly bright and wakeful. The case as one of pure sleeping attacks is very interesting, and, as will be readily acknowledged, differs entirely from those frequent cases of epileptic vertigo with momentary loss of consciousness.

Epilepsy is a disease of the brain cortex, and is caused by a temporary affection or abolition of the central processes of inhibition. It is probable that the clinical pictures of all epileptic phenomena are modified by the topical distribution of this inhibitory interference; that epileptic vertigo is due to a disorder in the cerebral hemispheres and the typical general convulsion is dependent upon an extension of the disorder to the medulla and convulsive center here situated, or to the cortical centers. If we are right in these assumptions, it follows that cases of epileptic psychic equivalents are due to an affection of the

psychic centers. We are therefore warranted in classing these cases of epileptic sleep as cases of psychic epilepsy, and in attributing their causation to a disorder of these psychic centers.

Siemens believes in the existence of a sleep center, probably situated in the medulla not far from the convulsive center, with which it is supposed to possess certain analogies. Such an assumption would materially aid us in understanding the mechanism of production of these cases of sleep seizures as well as of all epileptic sleeping states, but, unfortunately, we have no reason to take the existence of such a center for granted.

The great corpulence of our patient can not fail to cause remark, and the first question which forces itself upon us is whether there is not some connection between the corpulence and these attacks. We well know that fat people, particularly when they are seated, easily become drowsy; and Dickens's fat boy Joe, whose every appearance is greeted by the remark, "Damn that boy, he's asleep again," is familiar to us all.

That there is some connection between the corpulence and the sleep attacks I firmly believe, but I do not think that these attacks are due to the corpulence, but consider it more likely that in this corpulence we must recognize a state of perverted nutrition due to the pathological condition in the psychic centers. A case of marked somnolence extending over years, with psychic and physical characteristics of such a nature as to raise a suspicion of epilepsy, described by Morrison, weighed two hundred and fifty-nine pounds, and "his whole physique was gross."

Finally, as an example of the medico-legal relations which such sleep seizures may have, I will briefly report the following case:

W. B. W., seen in prison in October, 1889, for the purpose of giving an opinion in regard to his sanity. The prisoner, whose wife had left him on account of his violent temper and irregularities of life, purchased a butcher knife, and, seeking her out in her own dwelling, attempted to murder her, and nearly succeeded in so doing. He was arrested, and professes to have total amnesia for all occurrences from a time prior to the purchase of the knife until he found himself in the station house—a period of over two hours.

It is needless here to enter upon the details of the case or upon the reasons which led me to consider him sane and a malingerer. Suffice it to say that he professed to have had three attacks of unconsciousness during his life, each of which lasted for several hours. In one of these attacks he says he traveled from Buffalo to Niagara Falls without knowing that he had done so. He gave no history of convulsions, of tongue biting, etc., but my notes contain the following: "Patient says that he falls asleep easily during the day; that he falls asleep during important conversations and under circumstances which should make him wakeful; he furthermore says that he passes restless nights, and he has been a somnambulist since childhood."

To-day, were I to give an opinion upon the same case, I think that, in view of the notes last cited, I should be more than inclined to consider the subject an epileptic. Whether such a decision would have influenced my opinion as regards his sanity and as to his malingering is, however, an entirely different question. Westphal enters fully upon the forensic import of these sleeping attacks and refers to the case of von Zastrow (detailed in Casper and Liman, 1876, vol. i, p. 509), in which he carefully sought for a history of epileptic attacks, but was unable to find any; Westphal, however, remembers that von Zastrow said that he frequently fell asleep during the day.

This much is certain: that, medico-legally, a history of such sleeping attacks merits quite as much attention as does a history of absence, or even of marked epileptic con-

vulsions. That attacks of *petit mal* in which the patient, while in the midst of any occupation, suddenly loses consciousness, if only for a few moments, may present medico-legal relations of a complicated nature, is well known; that psychic equivalents, psychic disorders which take the place of convulsions, are even of more importance is seen from the fact that theft, arson, sexual crimes, and murder have all been committed during such a state, and have become the subject of medico-legal inquiry. All that I wish here is to emphasize the well-known fact that in all dubious cases, of whatsoever nature, in which amnesia is alleged, we should carefully search for corroborative data of an epileptic character.

One more question I desire to touch upon before concluding, and that is the value of somnambulism as a corroborative symptom in the diagnosis of the epileptic nature of any trouble. In the three cases which I have here reported the patients were all subject to somnambulatory attacks. Of Westphal's case it is said that the woman suffered from nocturnal insomnia, and could sleep only a small portion of the night, and in Fischer's case there was insomnia when the condition first came on; there was restlessness at night; the patient had bad dreams, during which she saw people, etc. The sister relates that the patient often sleeps with open eyes; that she often speaks in her sleep and answers questions. Of these nocturnal occurrences Fischer says: "Often she got up at night and imagined that some one was in front of her door who wanted to kill her; but she never left her room. She says that she sees these people in her dreams." It is probable that both these patients were somnambulists. Of Berkan's cases, two of the three which I consider typical cases of sleep seizures also presented somnambulatory phenomena. Of the nocturnal condition in the few other published cases nothing is said.

While it is true that somnambulism (non artificial) may be due to a variety of causes, we know that foremost among these, beyond a doubt, stands epilepsy. It is also well known that epileptics are particularly subject to vivid and exciting dreams. So it happens that somnambulism is frequently the first symptom which may attract our attention to the possible epileptic nature of an affection, and that especially in patients suffering from recurring sleep seizures the presence of somnambulism is of diagnostic value.

Diagnostically, these cases will have to be distinguished from cases of narcolepsy, so called, and from cases of hysterical sleep. In narcolepsy there is always consciousness of what is going on during the attacks, the patient is never obtuse when awakened, and he at once has full possession of all his intellectual faculties; sensibility and motility are normal, and the attack can be cut short by any severe stimulus. Hysterical cases, even if presenting no other stigmata of hysteria, will generally show a complete or incomplete hemianæsthesia or a retraction of the visual field; the attacks occur in consequence of psychic influence, and are prolonged, lasting several hours or more.

All in all, I would formulate the diagnosis as follows:

Sleeping attacks occurring alone or in combination with other symptoms, if of brief duration and followed by amnesia, are probably epileptic in character. If somnambulism, particularly of a noisy kind, is present, this probability becomes a certainty.

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